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Disaster and Gender in Southern Illinois

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Disaster and Gender in Southern Illinois

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Executive Summary

The unique needs of women in the context of disaster have been largely overlooked in disaster management. For this reason, women have been hard-hit by natural disasters in the United States and internationally. However, by learning from the mistakes of the past, the negative effects of disasters on women may be mitigated through disaster management that is sensitive to the different needs and experiences of women and men.

Illinois is at risk for a variety of natural disasters including floods, tornadoes, earthquakes, and storms. Some areas of the state, including southern Illinois, are more vulnerable due to social characteristics such as high poverty rates, high rates of single parent households, large elderly populations, and above average rates of domestic violence and sexual assault.

Men's and women's experiences of these social vulnerabilities within the context of disaster are different. Research on past disasters has documented the ways that gender-based social roles and social gender equality determine how hard and in what ways women are hit by disasters. More often than not women continue to shoulder the bulk of caretaking responsibilities. Further, women have different needs in regard to health, and safety from violence.

The negative effects of disaster on women and the communities that they reside within can be reduced by preparedness plans that consider the needs of women. Before a disaster hits an area, local leaders should be aware of towns or counties with high rates of gender-based violence, single parent households, and poverty as those women are especially at risk in a disaster. Leaders should also be aware of areas that have a greater than average population of children, the elderly, or disabled persons. Evacuation plans should be tailored with these characteristics in mind.

Further, coalitions should be built between social service providers, local community centers, and formal disaster management groups. The resources and knowledge of these community based groups should be integrated into the disaster plans.

- For example, local groups might be key players in creating and implementing community-based warning systems.
- In conjunction with women's centers or shelters there should be concrete plans to keep domestic violence victims safe in the event of a disaster. These plans would include measures to secure victim anonymity – even if they request disaster relief – and housing support that would not put them in danger of becoming dependent on or being tracked down by abusive partners.
- In the immediate aftermath of disaster, plans should be in place to carry out emergency medical care for pregnant women, infants, and women of reproductive age. Providing such care would be more effective if a variety of health professionals are trained in the risks and needs of these populations in the disaster context.
- Finally, regional networks of domestic violence service providers and healthcare providers should be created. These networks should be integrated into emergency plans in an effort to provide continuous care to those who need it. This may include providing

domestic violence victims with lists of other shelters or women's centers within the state, and neighboring states. It may also entail ensuring that important medical records are kept in locations that cannot be destroyed by disaster and can be accessed remotely.

Overall, by acknowledging women as a population with unique needs and strengths in the event of a disaster, and by taking steps to reduce gender-based vulnerabilities - the negative effects of disasters on communities can be mitigated. The southern Illinois region can become more resilient to the costly damages of disasters by implementing gender-sensitive disaster management measures before the next natural disaster hits the region.

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Since the mid-1990s there has been an increase in natural disasters and the number of recorded fatalities from those disasters (World Health Organization, 2002). While we cannot control the weather, there are steps that can be taken to reduce the damage to people and their communities that these disasters may cause.

Vulnerable populations (including women, children, the elderly, the poor, and the disabled) are particularly at risk and often the hardest hit when natural disasters strike. Research has found an inverse relationship between the level of gender equality within a society and the negative effects of disaster on women (Women's United Nations Report Network, 2007).

No policy would be complete without special attention to the needs of women at all stages of disaster including mitigation, preparedness, response, and recovery. Pre-storm knowledge of local populations and their needs has been found to significantly reduce the negative impact of natural disasters.

The purpose of this paper is to review findings from past disasters regarding the unique needs, strengths, and vulnerabilities of women when natural disasters strike. While other demographic factors (e.g. race, class, ability, and age) also impact a person's vulnerability to and experience of disasters, this paper will consider these other factors only in so far as they affect the experience of women in disasters.

Lessons from past disasters will be used to shine light on the vulnerabilities and strengths of women in a particular region – southern Illinois - in hopes of informing gender sensitive disaster policy in the area. The paper will begin with an overview of existing empirical literature on this subject. This overview will highlight the specific policy implications and lessons that can be drawn from this literature[1]. The literature review will be followed by an examination of the southern Illinois region including: natural disaster risks in the area, overall social vulnerability, and the vulnerability of women. The purpose of this investigation is to highlight the particular local vulnerabilities of the region, in hopes of informing gender-sensitive disaster management practice.

[1] Throughout the rest of the paper best practices for gender sensitive disaster management will be highlighted in bold. These recommendations will also be summarized in Appendix II.

1) Gendered lessons from past disasters

Research on the ways that gender shapes an individual's experience of disasters has been slow to reach national attention because, on the surface, natural disasters appear to be indiscriminate in their effects. While social scientists have become increasingly concerned with the different ways that men and women of various social locations experience disaster, gendered discussions have been nearly absent in policy research and disaster management practice. In the following paragraphs, I will review past lessons from largely North American disasters on women's health – including reproductive health and mental health, gendered experiences and risks to sexual and domestic assault post-disaster, and women's resilience and roles in community rebuilding after disasters.

a) Health

Low-income, uninsured women with pre-existing conditions are particularly vulnerable victims of disaster. Disasters often destroy medical infrastructure, including social medical infrastructure, leaving many disaster victims with no knowledge of where they can go to receive care. Difficulties locating medical care post-disaster can be compounded by the loss of medical records and histories. Regardless of class, women of childbearing age face unique challenges in managing reproductive health and keeping themselves and those under their care healthy. Further, women often shoulder most of the caretaking responsibilities during a disaster and struggle to manage both their own psychological distress and the repercussions of trauma on those under their care including the elderly, children, and persons with disabilities. African-American women are most at risk for post-disaster negative health outcomes (Adeola and Picou, 2012), particularly those that lose major financial resources such as homes (Picou and Hudson, 2012). The risk of negative health outcomes and post-disaster distress is increased by the loss of social support – social support networks are often based within communities that are destroyed (Galea, Tracy, Norris, and Coffey, 2008).

Hurricane Katrina destroyed the social medical infrastructure. Many pregnant women miscarried and the disability rate rose from 20.6% to 24.6%. Much of the newly disabled population were young to middle-aged Black females, who suffered the most stress and loss from the storm (Sastry and Gregory, 2013).

***Image: Sklar, 2005**

i) Reproductive

When health care facilities are lost in the event of a disaster, women lose access to reproductive care. Women of child-bearing age – particularly those who are pregnant or post-partum – and their unborn or young children are highly susceptible to poor health as a result of disasters. For example, managing menstrual cycles becomes a challenge – women's bodies are more exposed to waterborne contaminants especially when tampons and pads are in place and the risk of toxic shock or infection increases (Enarson, 2012). Changes in fertility are also often observed in recovering communities including both increased and decreased birth rates (Zotti et al., 2013). For example, in the aftermath of Hurricane Katrina one study found that for at least six months after the storm many women could not use their usual birth control method and four out of five did not use birth control (Kissinger et al., 2007). This led to a boom in births which some refer to as the 'Katrina babies.' Further, without facilities for managing sexual health, increases in rates of teen pregnancy, sexually transmitted diseases, and HIV/AIDS infection have been observed in the aftermath of disasters (Greeley, 2008).

Negative birth outcomes often result from disasters, such as low birth weight, preterm birth, early pregnancy loss, spontaneous abortion, intrauterine growth restriction, and decreases in infant head circumference (CDC, 2013). Perhaps due to inconsistencies in study methodologies, the observed effects of disasters on reproductive health vary. For example, spontaneous abortion rates were elevated in the wake of a New York flood in 1972 (Enarson, 2012); babies born to mothers who were pregnant during 9/11 were smaller than others their age (Landrigan et al., 2008); for the year after Hurricane Katrina birth weights were lower (Callaghan et al., 2007); the ratio of female to male births increased after 9/11 and the 1995 Kobe earthquake (Catalano et al., 2005); premature labor has been observed to have a positive relationship with strong heat (Lajinian et al., 1997); and fetal distress was observed in the babies born to mothers pregnant when Hurricane Andre struck (1992) after controlling for other factors (Zahran et al., 2010). This is just a sampling of the effects that disasters can have on pregnant women and their unborn children. While these findings are not necessarily consistent and have varied across disasters, the literature suggests that disasters usually lead to negative birth outcomes. **For this reason disaster managers and support organizations should prioritize providing care for pregnant, and post-partum women. Disaster planners should also incorporate emergency provision of birth control to women of reproductive age[2].**

[2] See Appendix II for a complete list of all of these recommendations for disaster managers and emergency care personnel.

Earthquake, Port-au-Prince (January 12, 2010). Scholars have found a relationship between earthquakes and preterm births. One study following the earthquake in Haiti, found that 31% of the births were preterm (Pinkert et al., 2013).

Image Paris, 2010.

There are many possible reasons for the negative health outcomes mentioned above. Zotti and Williams (2011) suggest that increases in caregiving responsibilities, lack of health care, and increased demands for physical labor, might contribute to post-disaster negative birth outcomes. Disasters also increase risk factors such as hypertensive disorder and anemia. Pregnant women have need for particular immunization and according to the CDC (2013), pregnant women are more susceptible to infections and many of the medications used to treat the infections can cause birth defects. In many disasters, victims become food insecure. The inability to eat well leads to vitamin deficiencies which are particularly hard on pregnant women and their unborn children (Enarson, 2012). Breastfeeding becomes especially important when the water for mixing formula is contaminated; however, shelters often lack private space for women to breastfeed (Enarson, 2012).

Due to the seriousness of the effects of disasters on women's health, consideration of women's needs and how they will be met in the event of disaster are necessary in disaster planning. First, knowledge of available facilities, their capabilities, and their location needs to be known by a wide range of practitioners. All medical records should be kept in a secure online system so that they may be accessed remotely by other health professionals. Further, health professionals – regardless of their specialization – should be equipped with knowledge of the potential effects of disasters on women's health. This goal could be accomplished through a series of short educational conferences or through in-house training sessions. Lastly, in the event of disasters, women's health care facilities should be set up immediately alongside other emergency health care facilities and every effort should be made to repair facilities that provide women's healthcare. These sites should be conceived of as critical infrastructure and built to reduce damage and loss of life.

ii) Mental Health and Trauma

Disasters are inevitably traumatic and tragic events. However, certain populations are at greater risk of psychological distress including: the elderly, women, adults with dependent children, the unemployed, and those who face great property damage and financial loss (Adeola, 2009). Women tend to be exposed to more stressors due to caretaking responsibilities. They are more likely than men to be sole caregivers of the elderly and children, to be poor, and to work in

unstable sectors (Enarson, 2012). Further, because women tend to live longer than men, they are more likely to be elderly and alone.

For example, when Hurricane Katrina struck, economic losses, particularly home loss, exacerbated post-disaster psychological distress (Paxson, Fussel, Rhodes, and Waters, 2012; Picou and Hudson, 2010). Hurricane Katrina put a great deal of strain on families. It was observed that the post-traumatic stress of parents had a direct relationship with the post-traumatic stress of their children and vice versa – the stress of children impacted the stress of mothers (Kelley, Brown, Le, Bosson, Hernandez, and Gordon, 2010; Reid, 2012; Lowe, Chan, and Rhodes, 2011). This relationship between the stress of mothers and the stress of children makes the provision of medical care to disaster survivors particularly important. Further, after Hurricane Katrina it was found that the increased strain on families led to an increase in intimate partner violence, compounding trauma and distress (Schumacher, Coffey, Norris, Tracy, Clements, and Galea, 2010). The increase in trauma and psychological distress brought about by natural disasters is often exacerbated by the weak mental health service infrastructure before a disaster and the loss of most of those services after the disaster.

Participation in community recovery efforts has been shown to decrease depression and post-disaster trauma (Tran, Lee, Nguyen, and Chan, 2013). Activity in religious communities and prayer has been shown to decrease post-disaster distress (Spence, Lachlan, and Burke, 2007). Religion and meditation can help to achieve posttraumatic growth for female survivors (Bosson, Kelley, and Jones, 2012). However, this is not the case if women believe that their experience was the result of the 'wrath of God,' or practice other negative religious coping (Chan and Rhodes, 2013). Overall, support networks and communities alleviate the effects of psychological distress (Hamilton-Mason, Everett, Hall, Harden, Lecloux, Mancini, and Warrington, 2012). This includes pets – pet loss exacerbated post-disaster psychological distress, particularly for participants with low-level pre-disaster community support (Lowe, Rhodes, Zwiebach, and Chan, 2009). Pets could serve as a comfort and alleviate post-disaster distress for isolated individuals. Further, communities need to make efforts, not only to provide health care that meets the immediate needs of families and individuals, but also mental health care. Without mental health care, recovery efforts will be stunted. **In summary, trauma and post-disaster distress can be alleviated by paving the way for women to be involved in their communities' recovery, encouraging the rebuilding of religious spaces and communities, encouraging the use of social support networks, providing pets or helping survivors reunite with pets, and rebuilding mental health care infrastructure.**

b) Sexual and Domestic Assault

The chaos, loss, and sorrow that accompanies natural disasters is aggravated by increased rates of sexual and domestic assault. Evidence has shown that although crime reports tend to decline in the event of a disaster, domestic violence does not (Tucker, 2001). Research has also

suggested that abuse is more lethal (Enarson, 1999), there are a greater number of first time victims (Houghten et al., 2010), and domestic violence is made worse by FEMA's housing policies.

For example, after the Exxon Valdez Oil Spill in 1989 there was an increase in domestic violence including child and elder abuse and neglect (Araji, 1992). After the Loma Prieta Earthquake the Commission for the Prevention of Violence Against Women (1989) found that many antiviolence services were disrupted or destroyed and there was a 300% increase in sexual assaults, 600% increase in domestic violence, and 50% increase in temporary restraining orders. An increase in domestic violence was also documented after Hurricane Andrew (Laudisio, 1993), the Missouri River Flood (Godina and Coble, 1995), Red River Floods (Enarson, 2012), Gulf Coast Hurricanes Katrina and Rita (Anastorio, Shehab, and Lawry, 2009), and post 9/11 (Enarson, 2012). Interestingly, although domestic violence service requests increased after 9/11 the shelters were initially almost emptied because victims wanted to be with their families (Enarson, 2012).

Some point to frustration, anger, and powerlessness in the face of disaster as a cause of the increased rates of gender-based violence (Fothergill, 2004). In Pardee's (2014) account of women's experiences in the Superdome after Hurricane Katrina she notes that violations of social norms including violence against women and children, "were enabled by the spatial entrapment of the stranded, the increasing population as more evacuees arrived, the rising sense of despair and uncertainty caused by the lack of information, and the militarized nature of the rescue efforts" (213). Power and control are central factors in the cycle of domestic violence – in the aftermath of a disaster both men and women face a loss of power and control but men often take this out on women in the form of violence (Brown, 2012). Women's unequal social and economic position before disasters determines their vulnerability to gender-based violence during and after disasters (True, 2013). Enarson (2012) suggests that higher rates of gender-based violence are also positively correlated with older age, psychological distress, overcrowded living conditions, substance abuse, the presence of relief services targeted to women[3], the loss of social support systems, lack of infrastructure to deal with gender-based violence, and male-dominated relief systems. Further, FEMA policies make it difficult for women to stay away from abusive partners because vouchers are often offered per household, self-worth fades in the face of crisis, and disasters complicate child custody issues. Lastly, evacuation can be very difficult for battered women who do not want to be found by their abusers – these women often avoid aid services that they believe will make it easier for their abuser to find them. Although, there are some women who use disasters as a window of opportunity to escape abusive situations (Enarson, 2012).

Housing for women and their children is crucial to women hoping to leave domestic

[3] This research suggests that relief services targeted toward women can anger men or incite feelings of injustice and lead to violence.

violence situations and FEMA's housing policies can create a lot of problems for domestic violence victims. Jenkins and Phillips' (2008) study of domestic violence victims after Hurricane Katrina found that women either had to return to abusive spouses to receive FEMA support or were tracked down by abusive partners who wanted to be part of the household that was receiving monies. Brown (2012) points to the difficulties in creating disaster evacuation plans for domestic violence shelters, "residents cannot join the exodus of disaster evacuees" because this may place them in danger of being found by their abuser. **Practitioners must consider ways to secure anonymity and housing for domestic violence victims. This may be accomplished by creating coalitions and shared disaster plans with other regional domestic violence shelters. These plans might include mutual promises to provide services and shelter to evacuees of disasters.**

Wilson, Phillips, and Neal (1998) found that "when community, antiviolence, and disaster organizations are aware of the existence and extent of violence before a disaster, they tend to be more sensitive to its presence following that disaster…violence against women in disaster can be reduced by planning ahead…" (84). **Gender sensitive disaster policy should pay particular attention to analyzing gender specific vulnerabilities including household structure, demographic trends, division of labor, occupations, working conditions, and control of economic resources. Before disasters occur, community builders should work to transform the work patterns of women, work skills of women, and bolster women's resources so that they are less economically vulnerable in disasters. Coalitions should be built between various social services before a disaster hits so that in the event of a disaster they can work together more effectively. Women's centers and shelters should create network coalitions so that in the event of a disaster, victims know where to evacuate to receive continuous care. Lastly, women should serve as resources and leaders who know their own particular needs and vulnerabilities and those of their community.**

c) Resilience

Women have complex relationships with families as mothers, daughters, wives, aunts, and grandmothers. They tend to provide and receive more support from family members than men and these relationships can both provide support and contributed to stress in the event of a natural disaster. It is often women who make decisions about evacuation, facilitate packing and homemaking in new locations, and women who are responsible for children, the elderly, and the disabled (Drabek and Boggs, 1968). **Knowledge of the family structures in an area – particularly locations where there are greater proportions of single parent households, elderly living alone, and persons with disabilities – is imperative in disaster planning.**

Women have been found to take disaster warnings seriously and respond accordingly more than men (O'Brien and Atchison, 1998). They often make decisions to evacuate based on what is best for those under their care (Davis and Rouba, 2012). Responsibilities to others make

both evacuation and recovery particularly difficult. For low-income families, evacuation is often made possible through networks of kin (Pardee, 2014). For example, research has found that decisions to evacuate New Orleans before Hurricane Katrina were often made by maternal authority figures who facilitated the evacuation and care of extended family networks (Zotti, Tong, Kietyka, and Brown-Bryant, 2012). These 'caravans of kin' helped to make evacuation feasible, provided emotional support for families and guarded individuals from suffering the full impact of poverty. In the aftermath of Katrina, the diaspora split up kin networks making poverty that was previously manageable, unbearable (Peek and Fothergill, 2008).

As communities begin the process of recovery from disaster, women often maintain traditional gender roles – ensuring that those in their care have a place to stay and are fed. These usually mundane tasks become almost impossible in storm destroyed structures, FEMA trailers, and storm shelters. After natural disasters, caretaking roles are expanded to include sheltering from poor health, managing trauma, avoiding toxic environments, and finding adequate schools for children. In the aftermath of multiple disasters, the work of female survivors has been remarkable. The successes of women's groups point to the need for women's representation in disaster recovery efforts.

Women are often hit hardest by the disaster and are more acutely aware of their own needs and the needs of their families (Ross, 2012). Disaster management and recovery has tended to be male dominated, "this formal disaster management system tends to under-utilize women in the disaster context because the actions defined as central to recovery are perceived to be more within the masculine realm" (Laska, Morrow, Willinger, and Mock, 2008, 19). However, only if women, particularly community residents, are included in the disaster process will the particular needs of women, families, children, and the elderly be appropriately addressed.

Overall, disaster policy should consider the role of women within extended family networks. First, evacuation policy should draw on the strengths of networks for providing emotional and financial support, and conceive of women as allies in the evacuation process who may be more likely to heed warnings. This may mean making efforts to keep groups together on evacuation buses, creating space for larger groups within trailers, and setting up community-based warning systems. In the recovery stage, housing options should draw on the strengths of communities by allowing disaster aid to be pooled, keeping groups together, and providing housing options for non-nuclear families.

In order for women's needs to be met after disasters, it is imperative that they have a powerful role in the recovery process. Women also need to be at the forefront of planning for future disasters. After Hurricane Katrina, the second devastation occurred in the delayed, disorganized, and insensitive government response. **The resources of local community centers, churches, and service workers should be made an essential part of all stages of disaster**

plans. These local centers are often better equipped to identify needs and match victims to services. **The expertise of women needs to be emphasized.** Women tend to be more in tune to the needs of their communities and can provide leadership for community rebuilding.

In conclusion, empirical literature has shown that men and women experience disasters differently and these gendered differences must be considered in order to reduce the negative effects of disasters on communities. A key insight that can be drawn from this body of research is that knowledge of the needs and vulnerabilities of a local community can greatly reduce the negative effects of natural disasters. In the following pages, I will use these lessons to assess the vulnerabilities and strengths of the southern Illinois region. I will begin by looking at the disaster risk in the area and overall social vulnerability. I will then look at gender-based vulnerabilities in the region and make recommendations for disaster policy that might reduce these vulnerabilities.

2) Gender Sensitive Disaster Policy in Southern Illinois

The empirical work on gender and disaster suggests that gender must be considered at all stage of disaster management. The focus of this paper will now shift to the southern Illinois region. First the area's vulnerability to natural disasters will be explored, followed by an examination of the social and gender-based vulnerabilities of the area by county and census tract. Lessons from national research on gender and disaster will be applied to this region. This region is vulnerable to a variety of disasters and women, the elderly, and the poor are particularly at risk. The goal of this section is to make public officials and non-governmental organizations aware of these vulnerabilities and steps that can be taken to address them.

a) Natural Disaster Risk

Flood	42
Storm	38
Tornado	25
Winter Storm	17
Microburst	2
Wind Storm	4
Earthquake	1
Heat	1
Hurricane Katrina Evacuation	1

Figure 1. Disaster and major emergency prevalence in Illinois in the past 100 years (FEMA, 2014)**.**

In the past 100 years the federal government has approved a major disaster declaration in Illinois 53 times and declared a state of emergency seven times (FEMA, 2014). While many of the winter storm disasters or emergencies have been in northern Illinois, the tornadoes and floods have largely hit southern Illinois. Further, while the last major earthquake occurred in 1968 in southern Illinois and did not lead to a disaster declaration, southern Illinois lies atop the New Madrid Seismic zone. In addition to major disasters, the region has been hit by many minor floods, earthquakes, and tornados in the last century (*The Southern Illinoisan,* 2011).

Over 100 years ago in 1811 and 1812 catastrophic earthquakes occurred along the New Madrid Seismic fault zone. Eyewitness accounts used apocalyptic language to describe the event. For example, George Heinrich Crist (1811-1813), a resident of north-central Kentucky at the time of the earthquake, wrote the following in his journal, "there was a great shaking of the earth this morning…It was not a storm. When you could hear, all you could hear was screams from

people and animals. It was the worst thing that I have ever witnessed." Later when another earthquake hit a month later in 1812 he said, "A lot of people thinks that the devil has come here. Some thinks that this is the beginning of the world coming to an end." Another survivor gives a short account of the quake in December 1811,

> *We were visited by a violent shock of an earthquake, accompanied by a very awful noise resembling loud but distant thunder, but more hoarse and vibrating, which was followed in a few minutes by the complete saturation of the atmosphere, with sulphurous vapor, causing total darkness. The screams of the affrighted inhabitants running to and fro, not knowing where to go, or what to do – the cries of the fowls and beasts of every species – the cracking of trees falling, and the roaring of the Mississippi – the current of which was retrograde for a few minutes, owing as is supposed, to an irruption in its bed – formed a scene truly horrible* (Martin, 1949, 344).

The United State Geological Survey predicts that there is a 7-10% chance of an earthquake similar to the earthquakes of 1811 and 1812 occurring in the New Madrid Seismic zone in the next 50 years (Chang, 2012; USGS, 2014). Without preparation, such an earthquake would be devastating to the area. The area's position atop the seismic zone is particularly troubling because the fault is centrally located rather than coastal, earthquake emergency preparation is not at the forefront of disaster preparedness in the region, and local infrastructure is not built with earthquake risk in mind.

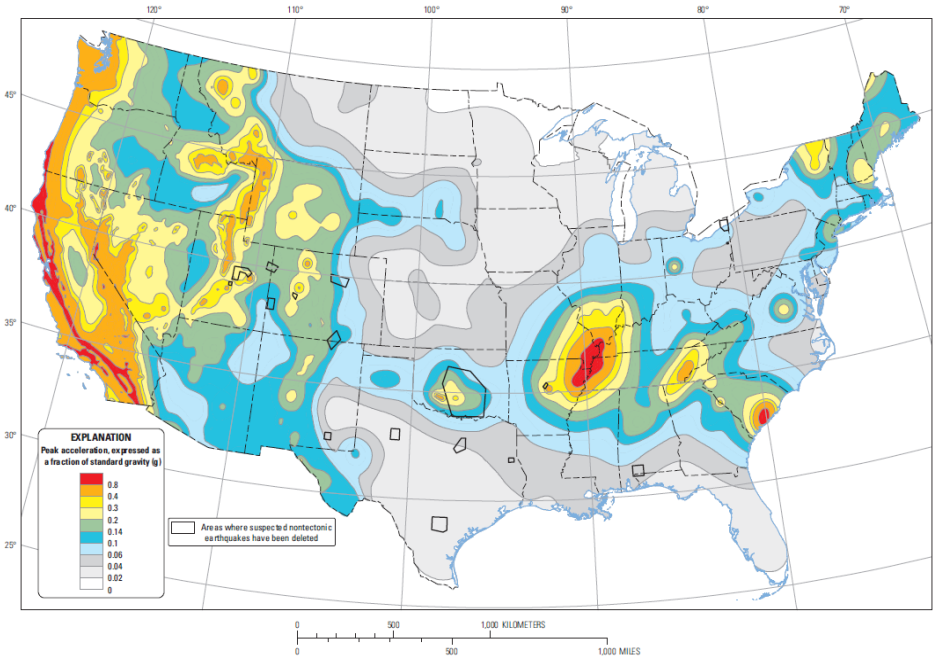

Figure 2. Earthquake risk in the next 50 years in the conterminous United States (USGS, 2014).

b) Social Vulnerability

Each community is characterized by social conditions which either make the community resilient or more vulnerable to natural disasters. While disasters are indiscriminate in their course, certain characteristics of a community can predict a worse aftermath and slower recovery. As mentioned previously, the real disaster of Hurricane Katrina may have been not in the hurricane and subsequent flooding but rather in the social factors that left some with few options to evacuate or rebuild. The Agency for Toxic Substances and Disease, a sub-agency of the CDC, has created a tool for identifying social vulnerability at the census tract level. This tool is meant to help disaster planners, public health professionals, and public policy analysts identify needs within their local communities[4].

The social vulnerability index combines factors related to socioeconomic status, household composition, minority status, language ability, housing, and transportation. Socioeconomic vulnerability is assessed according to rates of poverty, unemployment, income, and education. Vulnerability based on household composition is based on the proportion of persons older than 65 and younger than 17, as well as the number of single parent households with children under 18. Minority and language vulnerability is evaluated according to the number of non-white persons, and number of persons that speak English "less than well." Lastly, vulnerability based on housing and transportation is computed using variables measuring the number of housing structures with more than ten units, the number of mobile homes, the number of homes with more people than rooms, the number of persons in institutionalized group quarters, and the number of households with no vehicle.

The following maps (figure 3) present the vulnerability of the region according to each factor and the composite vulnerability. Areas shaded red are among the top 25% most vulnerable in the U.S. Compared to other areas of the U.S., southern Illinois does not exhibit a great deal of vulnerability based on household composition. High socioeconomic vulnerability is clustered in the urbanized areas and Pulaski County. Housing and transportation vulnerability is similarly distributed – highest risk is predominantly in the small towns and Pulaski County. There is a higher degree of minority and language vulnerability in the region - with many tracts ranking among the top fourth percentile for vulnerability in the U.S.

[4] Agency for Toxic Substances and Disease Registry (ATSDR). 2014. *The Social Vulnerability Index*, July 10. http://svi.cdc.gov

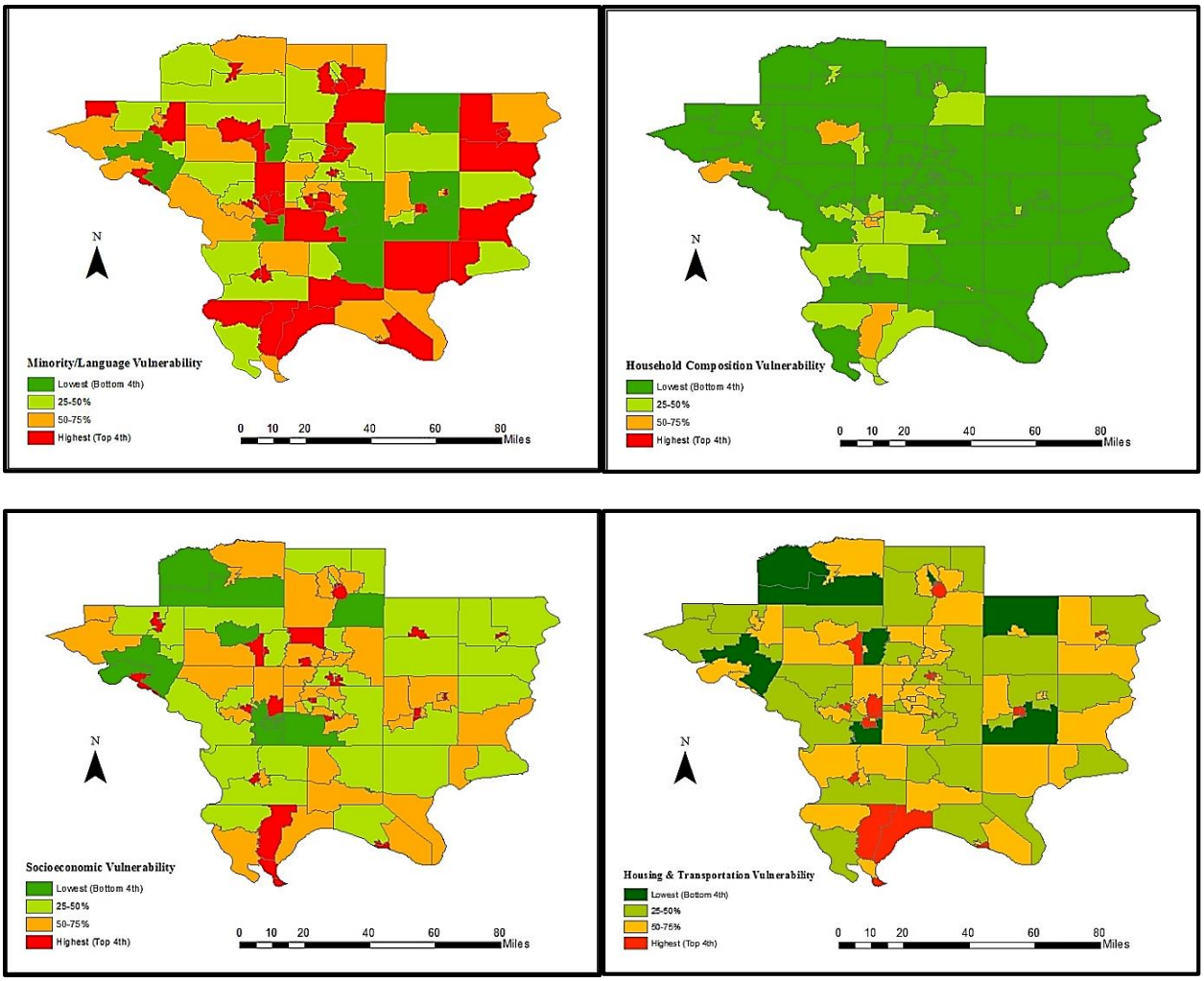

Figure 3. Social vulnerability in southern Illinois by census tract.

Composite social vulnerability for the region follows similar trends with the highest vulnerabilites in the urban areas (figure 4). Alexander, Gallatin, and Pulaski counties also have high social vulnerability to disasters in almost every tract of the respective counties. **The map in figure 4 suggests areas where extra preparation monies might be invested, and infrastructure might repaired or made more resilient to disasters. The map also identifies areas to focus volunteer support and other disaster aid in the event of a disaster.**

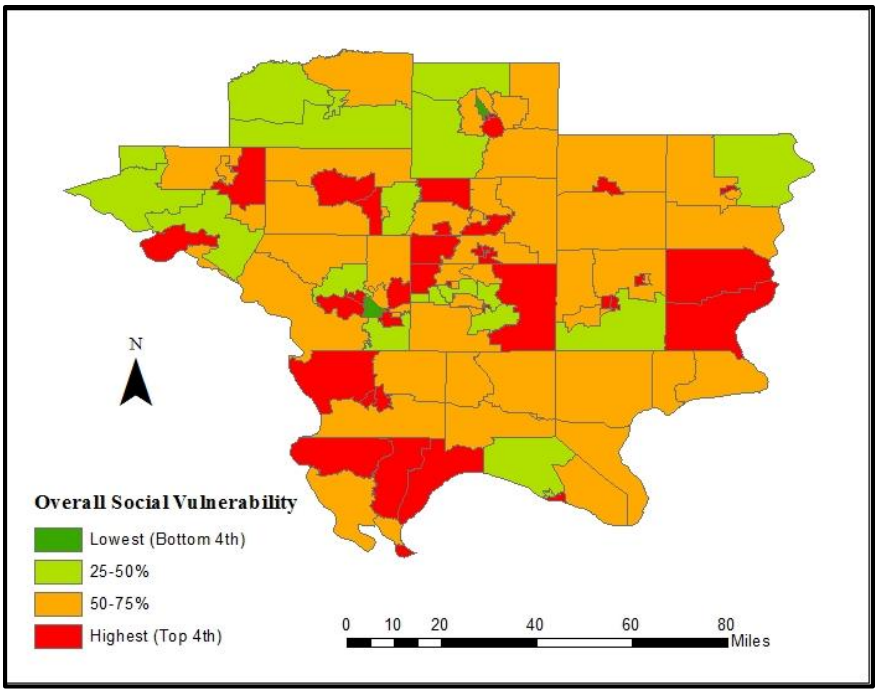

Figure 4. Overall social vulnerability of the 18 southernmost counties of Illinois.

c) Women's Social Vulnerability

As mentioned previously, pre-storm vulnerabilities are exacerbated by natural disasters. The national Disaster Mitigation Act (DMA) of 2000, which led to assessments such as the Social Vulnerability Index presented above, has made strides to reduce social vulnerability in the event of a disaster (ATSDR, 2014; DMA, 2000). However, lessons from previous disasters have shown that disasters impact women and men differently. While simply analyzing statistical gender differences in a community is not always helpful, Enarson (2012) suggests that the local vulnerability of women can be assessed with statistics measuring: female poverty rates, female work patterns, local family composition, rates of elderly women living alone, and rates of gender-based violence. In southern Illinois, women's vulnerability is aggravated by poverty, race, age, family structure (i.e. single parent households), domestic violence, and work opportunities. In the following paragraphs I will both look at the social vulnerability of women in southern Illinois compared to national averages and examine the geographic variability of social indicators in the region.

i) Race[5]

Women of color tend to earn less than other women and less than men in their ethnic group. They are more likely than other women or men in their ethnic group to live in poverty, more likely to be in poverty in old age, to head households alone, to live with health problems,

[5] See Appendix I, Table 5 for detailed statistical tables.

and to lack preventative or prenatal care (Enarson, 2012). The counties in southern Illinois with higher African-American populations tend to also be vulnerable in other ways including poverty, and family composition. On the chart to the left, one can observe that African-American women in the United States, Illinois, and southern Illinois tend to make up a larger proportion of those that are poor than one would expect given the population size. For example, notice in Alexander County, about 34% of the population is African-American but about 57.8% of poor women are African-American. **While racial inequality is not the focus of this paper, the factors that lead to the statistical discrepancy mentioned above should be considered in efforts to create resilient communities.**

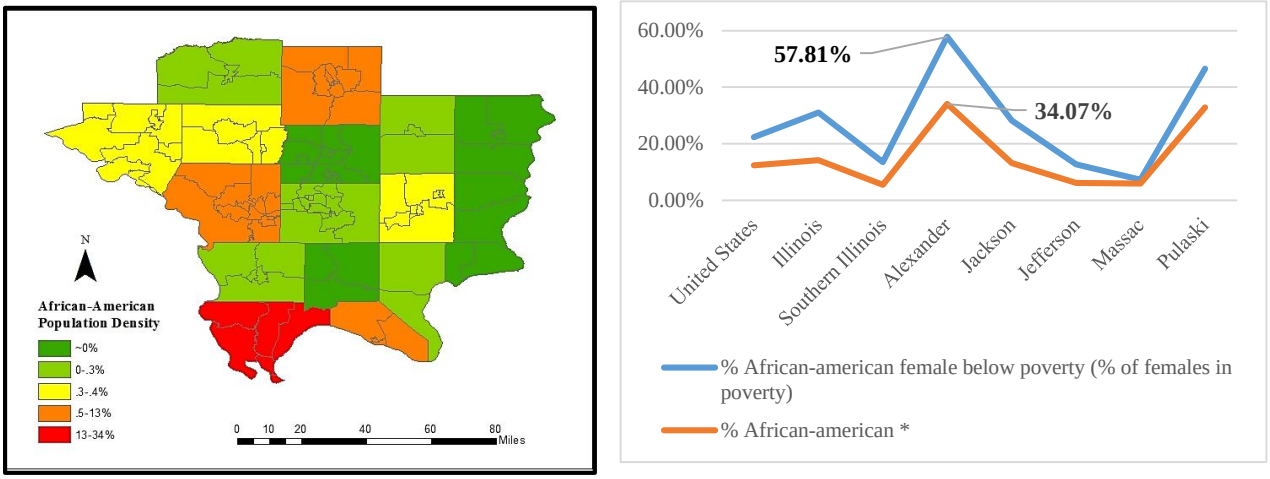

Figure 5. African-American population in southern Illinois and African-American women in poverty for selected counties, the region, Illinois, and the U.S.[6]

ii) Age[7]

Empirical research has shown that women live longer than men, senior women are more likely than senior men to live in poverty, more likely than grandfathers to care for grandchildren, more likely than their male counterparts to live alone, less likely than senior men to be married, and more likely to be physically limited (Enarson, 2012). In the U.S., an average of 7.42% of the population are women 65 or older and in Illinois 7.27% of the population is female and over 65. In southern Illinois there is an above average number of women 65 and older - 9.39%. Many counties have rates even higher – in White county 12.03% of the total population are females over age 65, and in Hamilton county 11.47% of the population are senior women. The majority of these women are living alone and many struggle with mobility. **In the event of a disaster, the counties on the east side of southern Illinois – including Massac, Pope, Hardin, Saline, Gallatin, Hamilton, and White – should be targeted for extra evacuation aid. In addition,**

[6] Removed counties from the graph with less than 5% African-American population.

[7] See table 1 in Appendix I for complete tables on the proportion of the population that is elderly and female in the study area.

post-disaster support should consider the needs of these senior women, particularly those living alone.

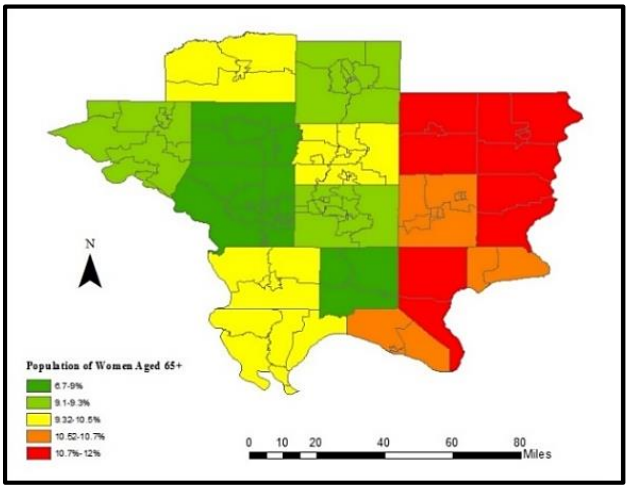

Figure 6. Elderly population in southern Illinois.[8]

iii) Poverty and Work[9]

Women make up a greater proportion of the population that is poor than men. Nationally, in the state of Illinois, and in southern Illinois about 55% of the poor are women (55.1%, 55.3%, and 54.5% respectively; Census, 2010). However, in southern Illinois, the percentage of the total population that is poor is larger than the proportion nationally (18.8% compared to 15.4%). This means that the proportion of the population that is both poor and female is higher in the region than national averages (10.27% compared to 8.47%). For example, in Alexander County, nearly a third of the population falls below the poverty line and 17.2% of the total population are poor women. The percentage of total population that is female and poor can be observed for each county in figure 7a.

The high rates of poverty in the region are troubling and increase the vulnerability to disaster. However, there is also a large number of people on the edge of poverty in the region. A personal crisis or natural disaster could easily tip many into poverty. The national median income is $43,880 inflation adjusted dollars, while in southern Illinois the median income is $37,678. Alexander and Pulaski counties have the lowest median incomes, that is, $27,203 and $34,583 respectively. The median incomes in the region suggest that those who are not currently in poverty could be in the next year and would neither have the financial reserves to comfortably evacuate for a disaster nor to rebuild their homes and communities without aid. The geographic distribution of women's median incomes in southern Illinois can be observed in figure 7b.

[8] Counties with rates of women 65 and older that did not exceed those of southern Illinois as a whole were removed from the chart. These rates can be found in appendix I

[9] See tables 4, 6, and 7 for complete data on poverty rates, employment, and median income.

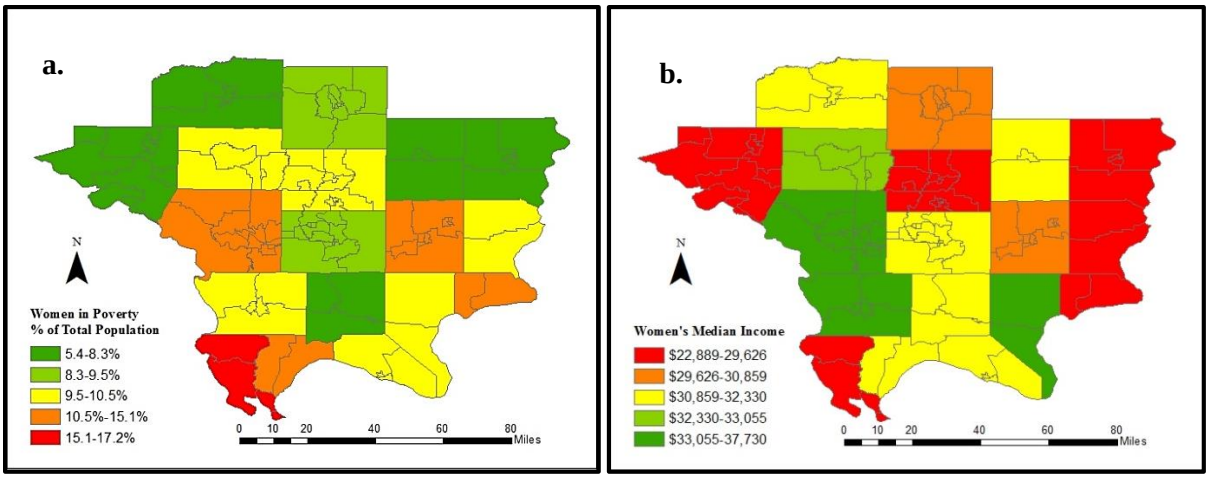

Figure 7a. Women in poverty as a percent of the total population.
Figure 7b. Median income of the full-time female workforce.

It has been established that southern Illinois is a poor region where many are living on the edge of poverty and that women make up more of the population that is poor than men. Particularly troubling is the ratio of women's to men's median incomes in the area. Nationally, it is known there is a gender-based wage gap – the median income of women working full-time in the U.S. is 78.4% of the median income of men working full-time. In southern Illinois, the wage gap is slightly worse – women make about 71 cents per dollar that men make. In some counties, the median income of women is as low as 51% that of men. For example, in both Gallatin and Hardin counties, women make 51% of what men make on average. Such wage discrepancies suggest that single women struggle more to provide for children and those in their care. Perhaps more seriously, gender wage gaps as high as these make women more dependent on men. Such financial dependence makes it more difficult to leave and stay out of domestic violence situations.

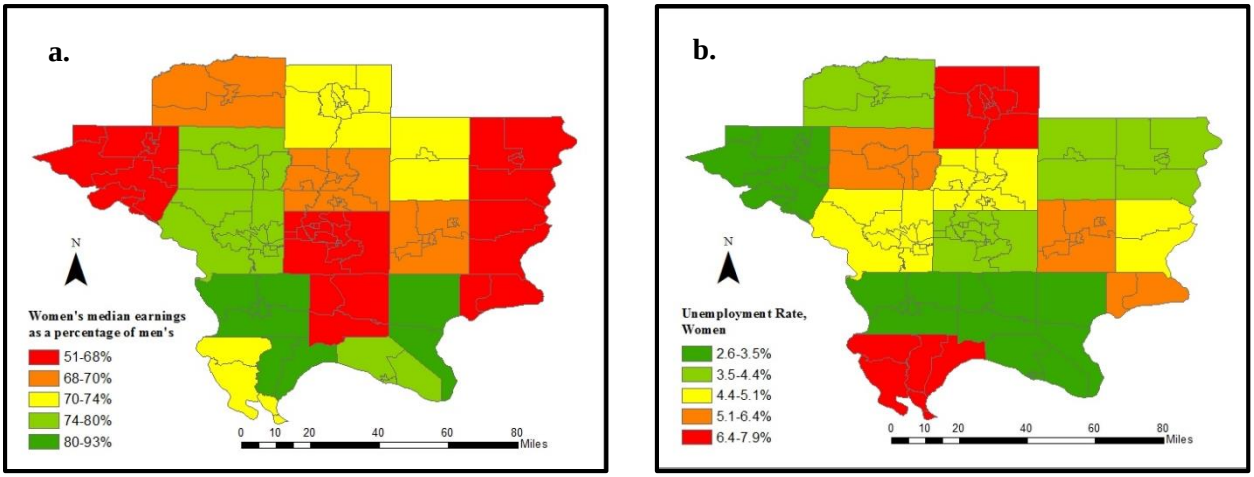

Figure 8a. Women's median earnings as a percentage of men's.
Figure 8b. Women's unemployment rate out of total civilian labor force.

Lastly, women's unemployment rate is over 6.4% in Alexander, Jefferson, Hardin, and Perry counties. Overall, the unemployment rate of women in southern Illinois is lower than the national average (4.9% compared to 5.4%); however, in the event of a disaster the complete absence of workplace benefits or supports for these populations should be considered.

Overall, it is imperative for disaster managers to consider the high poverty rates of the region when creating evacuation and recovery policies. The high percentage of the population (and of women in particular) who are either in poverty or on the edge of poverty means that the region has a large population of persons who might lack the resources to evacuate on their own and lack the financial buffer to recover after a disaster. Further, the wage gap in the area suggests that women are more financially vulnerable than men and potentially more financially dependent *on* men. This wage discrepancy puts women at higher risk of being the victims of domestic violence and not escaping potentially dangerous situations. **For these reasons, disaster plans should provide evacuation transportation and support, target aid to the poorest communities for rebuilding, and be sensitive to the financial dependence that might keep women in domestic violence situations. Additionally, steps can be taken to safeguard communities from the ill-effects of disasters before they strike by bolstering the economies of the region, providing job training and opportunities for the poor, and working to reduce gender-based wage gaps.**

iv) Family Composition[10]

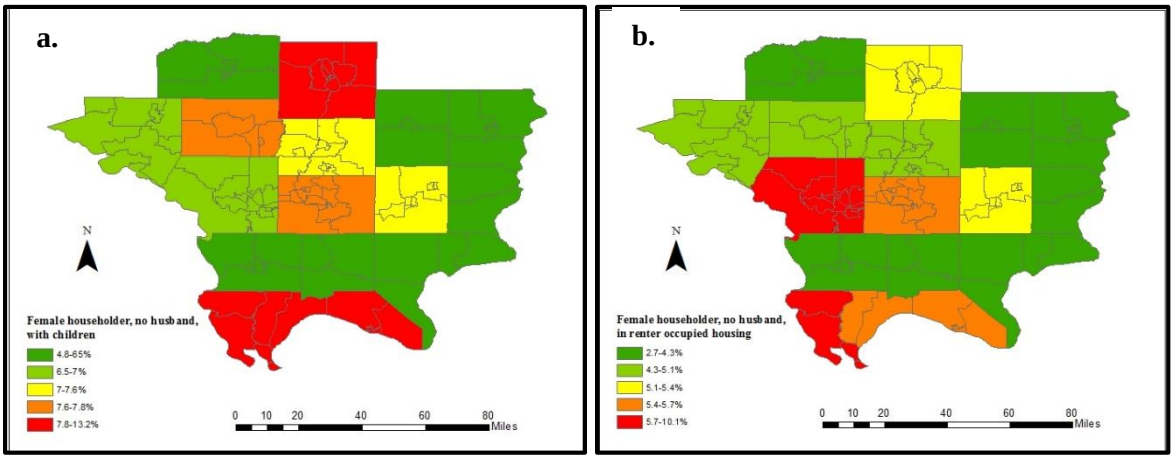

Figure 9a. Percentage of all households that are female headed with no husband present and children under 18.
Figure 9b. Percentage of all households occupied by single women with no husband present that are rented.

[10] See table 2 and table 3 in Appendix I for detailed tables.

Single parents are hard hit by disasters and often face the greatest obstacles to keeping themselves and their families safe. When separated from their support networks, single parents have to single-handedly shoulder the task of evacuation, make sure that those under their care are safe and happy, rebuild life in a new location, and make decisions for their family.

In the U.S. nearly a quarter (25.8%) of families with children are headed by a single woman - in southern Illinois the rate is about the same (26.2%). However, there are counties within the region that have a much higher percentage of single female-headed families. In Jackson county 31.2% of families are headed by a woman on her own, in Pulaski County 35.5% of families, and in Alexander county 45.3% of families are headed by single women. **In the event of a disaster, extra evacuation aid and support should target these families. After a disaster steps should be made to accommodate these families. For example, housing policy may provide structures for non-traditional and extended families and provide daycare so that women can look for work or take care of their own mental and physical health.**

Further, many single mothers rent. In the U.S. and southern Illinois about one-fifth of rental properties are occupied by single women. While homeowners face obstacles to obtaining aid money and rebuilding their homes after a disaster, renters have no right to the rented home that they have lost. This issue should be considered in the rebuilding process. **Efforts should be taken to provide women and their children with homes where they can settle and rebuild their lives even if they were not homeowners. Children struggle with continued displacement and lack of stability and providing families with stable home as soon as possible would speed recovery.**

v) Gender-based Violence[11]

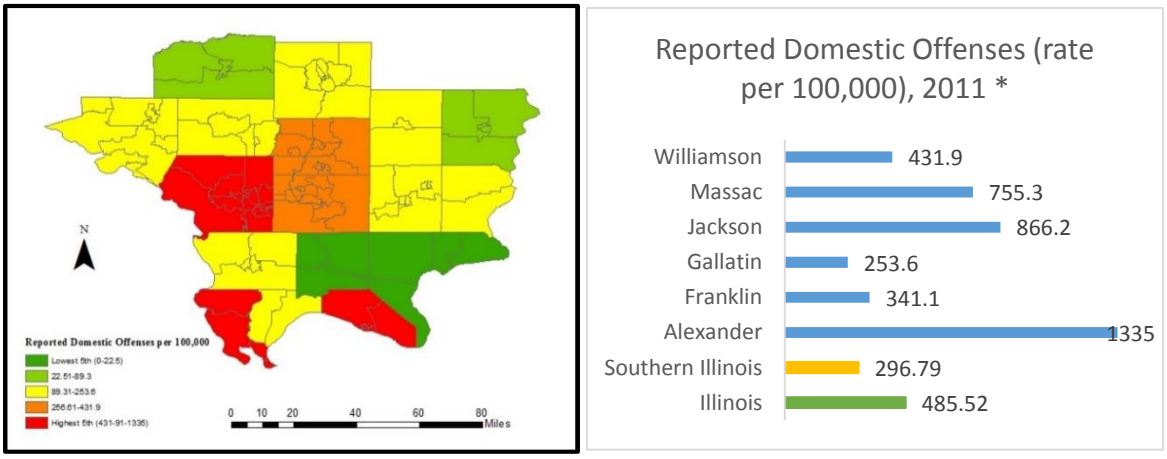

Figure 10. Reported domestic offenses per 100,000 people in 2011. [12]

[11] See table 8 in Appendix I for detailed statistics.

[12] In the bar chart counties with <200 offenses were deleted. Results were derived from the ICJIA Crime and Risk Factor Data.

While the stress and uncertainty that accompanies a disaster does sometimes bring about new cases of domestic and gender-based violence, the rates of this violence before a disaster suggest the severity that might be expected after the disaster. While domestic offenses are often difficult to track and under-counted, the data presented above is suggestive. It has been estimated that on average in the U.S. there are 210-540 domestic offenses per 100,000 people per year. In Illinois, the rate of offenses is toward the high end of the national average – 485.52 offenses per 100,000 people. In southern Illinois, the average rate of domestic offenses is lower but individual counties exhibit high variability. Five out of 18 counties have rates of domestic offenses below 90. However, in three counties the rates are above 431 per 100,000. In Williamson County there were 431.9 offenses per 100,000 persons in 2011, in Massac County there were 755.3 offenses, in Jackson County there were 866.2 offenses, and 1335 offenses per 100,000 people were recorded in Alexander County.

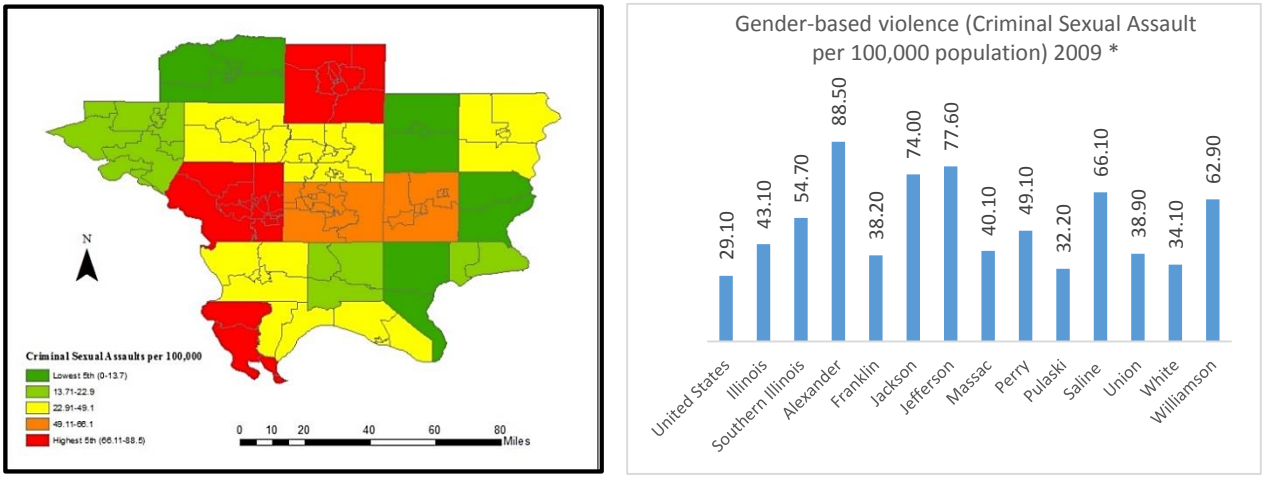

Figure 11. Rates of criminal sexual assault per 100,000 people in 2009.[13]

Rates of criminal sexual assault are also high in Jackson and Alexander Counties as well as Jefferson, Williamson, and Saline Counties. Nationally, there was an average of 29.1 sexual assaults per 100,000 people in 2009, in Illinois there were approximately 43.1, and in southern Illinois the rate per 100,000 was 54.7 in 2009. The rate of sexual assaults in southern Illinois is nearly double the national average, and some counties have reported rates almost triple the national average. In Alexander County there were 88.5 assaults per 100,000, in Jefferson County 77.6, in Jackson County 74, in Saline County 66.1, and in Williamson County there were 62.9 assaults

High rates of poverty, unemployment, female headed households, and low ratios of women's median pay to men's make the women in these areas particularly vulnerable to gender-based violence**. In the event of a disaster, domestic violence professionals and disaster managers should spend resources in the counties mentioned above to reduce the risk of**

[13] Charts were derived from the Uniform Crime Reports Illinois/US (2009)

violence. Further, steps should be taken now to reduce the rates of gender-based violence in this region. This may include education on self-defense and gender-based violence, empowering women with job skills to achieve greater self-sufficiency, and making efforts to reduce gender-based wage gaps.

3) Conclusions

As the frequency and intensity of natural disasters increase, it is of utmost importance that the particular needs of vulnerable populations are taken into account in emergency plans and policies. Past natural disasters have shown that an individual's social location shapes their experience with disaster. Research has pointed to age, race, class, ability, and gender as factors that powerfully affect a person's ability to survive and recover from disasters.

For women, the level of gender equality within a community is inversely related to the negative impacts of disasters. The negative impacts for women have been found to manifest in negative physical and mental health outcomes - particularly for women of reproductive age - and increased rates of domestic and sexual assault. Further, women's roles within families as caretakers place greater responsibility on women to ensure the safety of those less able – these same roles make women a valuable but undeveloped resource for disaster management professionals.

Southern Illinois is a region at risk of experiencing a variety of natural disasters including: floods, winter storms, tornadoes, and earthquakes. Many counties in the region have high social vulnerability to disasters – particularly due to high rates of poverty, inadequate and unsafe housing (e.g. trailers), and lack of transportation. This overall social vulnerability is clustered in urbanized areas and Alexander, Gallatin, and Pulaski counties.

The vulnerabilities of women in the region vary across counties. Southern Illinois has a greater than average population of women over 65 and many of these women live alone. As stated above, the region has higher than average poverty rates with median income levels for many counties nearing the poverty level. Particularly concerning is the gendered wage gap in the region. For example, in Gallatin and Hardin counties, women's median income is 51% of men's median income. Regionally the proportion of families that are female-headed is about average (26.2%) but in Jackson, Pulaski, and Alexander counties this rate is above average with many of these women living in rental homes. Lastly, many counties in southern Illinois have above average rates of gender-based violence including domestic violence and criminal sexual assault. The rates are particularly concerning in Alexander, Jackson, Jefferson, Massac, Saline, and Williamson counties.

Overall, southern Illinois is a region at high risk of natural disasters with populations that are very vulnerable to such events. The first step in mitigating the negative effects of a natural disaster on women would be to identify vulnerabilities and acknowledge local women as persons with unique knowledge and skills due to their social locations. Such analysis should be undertaken at a local scale to capture the unique strengths and vulnerabilities of communities. This report has identified a number of best practices which have been summarized in Appendix II. These suggestions grew out of other jurisdictions' experiences with disasters. We recommend consideration of these lessons to decision makers in the southern Illinois area. We may not be

able to predict the occurrence of natural disasters, but the damage that is done to local populations can be mitigated by preparedness measures and recovery plans.

4) Appendix I: Tables

Table 1
2010 Decennial Census
Age and Housing Status

	Female 65+	Female 65+, living alone	Female 85+
United States	7.42%	6.70%	1.20%
Illinois	7.27%	7.00%	1.26%
Southern Illinois	9.39%	9.09%	1.65%
Alexander	9.61%	8.98%	1.47%
Franklin	10.52%	10.13%	1.93%
Gallatin	11.43%	11.49%	1.66%
Hamilton	11.47%	11.09%	2.44%
Hardin	10.65%	10.60%	0.95%
Jackson	6.71%	6.19%	1.28%
Jefferson	9.16%	9.39%	1.78%
Johnson	9.05%	8.75%	1.19%
Massac	10.64%	9.98%	2.01%
Perry	8.96%	9.51%	1.70%
Pope	10.74%	8.04%	1.36%
Pulaski	10.24%	10.98%	1.66%
Randolph	9.21%	9.43%	1.67%
Saline	10.68%	10.42%	1.75%
Union	9.92%	9.38%	1.61%
Washington	9.55%	8.47%	1.74%
White	12.03%	11.04%	2.31%
Williamson	9.33%	9.02%	1.49%

**All percentages are of the total population in the area.*

Table 2

2010 Decennial Census

Family Composition

	*Female householder, no husband present	**Female householder, no husband present with own children under 18 or with related children under 18 years
United States	13.10%	25.77%
Illinois	12.90%	24.85%
Southern Illinois	10.90%	26.17%
Alexander	18.47%	45.26%
Franklin	11.60%	25.66%
Gallatin	9.99%	23.94%
Hamilton	9.17%	20.94%
Hardin	9.24%	23.27%
Jackson	10.23%	31.17%
Jefferson	11.42%	27.58%
Johnson	8.27%	19.21%
Massac	12.02%	26.78%
Perry	11.28%	26.17%
Pope	7.76%	21.65%
Pulaski	14.35%	35.48%
Randolph	10.05%	22.71%
Saline	11.70%	26.90%
Union	10.63%	22.20%
Washington	7.31%	16.39%
White	9.52%	22.69%
Williamson	11.49%	26.37%

**Percentage of total households*

***Percentage of total families with children*

Table 3

2010 Decennial Census

Family Composition and Housing

	Family, female householder, no husband, in renter occupied housing *	Family, female householder, no husband, in renter occupied housing **
United States	6.83%	19.57%
Illinois	6.57%	20.20%
Southern Illinois	5.14%	17.70%
Alexander	10.06%	32.24%
Franklin	5.06%	20.13%
Gallatin	3.54%	16.28%
Hamilton	3.41%	16.60%
Hardin	3.81%	19.47%
Jackson	6.14%	12.36%
Jefferson	5.40%	19.87%
Johnson	3.23%	17.87%
Massac	5.61%	22.33%
Perry	4.91%	21.31%
Pope	3.50%	18.08%
Pulaski	5.68%	23.36%
Randolph	4.52%	18.62%
Saline	5.15%	18.98%
Union	4.28%	17.89%
Washington	2.70%	13.96%
White	3.91%	16.55%
Williamson	5.60%	19.63%

**Percentage of all occupied housing*

***Percentage of renter occupied housing*

Table 4

2010 Decennial Census; 2013 American Community Survey (ACS)

Poverty Rate

	Poverty Rate*	% female below poverty level**	% female below poverty level***
United States	15.37%	8.47%	55.09%
Illinois	14.13%	7.82%	55.33%
Southern Illinois	18.82%	10.27%	54.54%
Alexander	31.61%	17.21%	54.44%
Franklin	19.08%	10.47%	54.84%
Gallatin	17.16%	9.51%	55.44%
Hamilton	17.07%	8.34%	48.83%
Hardin	23.59%	11.46%	48.59%
Jackson	30.45%	15.09%	49.55%
Jefferson	16.55%	9.48%	57.29%
Johnson	14.06%	7.12%	50.67%
Massac	16.32%	9.77%	59.89%
Perry	18.37%	10.33%	56.24%
Pope	16.99%	10.10%	59.44%
Pulaski	18.85%	10.64%	56.44%
Randolph	12.41%	7.07%	57.01%
Saline	19.10%	11.53%	60.37%
Union	19.46%	10.24%	52.62%
Washington	10.20%	5.45%	53.49%
White	15.61%	8.34%	53.45%
Williamson	15.57%	9.01%	57.86%

** Percentage of total population (Census 2010)*

***Percentage of total population (ACS 2013, 5-year estimates)*

****Percentage of total population in poverty (ACS 2013, 5-year estimates)*

Table 5

2010 Decennial Census; 2013 American Community Survey (ACS)

Race and Poverty Rate

	% African-American*	% African-American female below poverty**	% African-American female below poverty***
United States	12.34%	12.30%	22.32%
Illinois	14.15%	17.19%	31.07%
Southern Illinois	5.45%	7.36%	13.50%
Alexander	34.07%	31.47%	57.81%
Franklin	0.06%	0.04%	0.07%
Gallatin	0.33%	0.43%	0.78%
Hamilton	0.59%	0.00%	0.00%
Hardin	0.33%	0.00%	0.00%
Jackson	13.10%	14.00%	28.25%
Jefferson	6.15%	7.30%	12.74%
Johnson	0.35%	0.20%	0.39%
Massac	5.88%	4.35%	7.27%
Perry	3.41%	4.71%	8.38%
Pope	2.09%	3.78%	6.35%
Pulaski	32.82%	26.30%	46.59%
Randolph	4.90%	5.55%	9.73%
Saline	3.22%	4.74%	7.86%
Union	1.84%	2.75%	5.23%
Washington	0.47%	0.89%	1.66%
White	0.22%	0.45%	0.84%
Williamson	3.22%	5.24%	9.05%

** Percentage of total population (Census 2010)*

***Percentage of total population in poverty (ACS 2013, 5-year estimates)*

****Percentage of total population of females in poverty (ACS 2013, 5-year estimates)*

Table 6

2013 American Community Survey (ACS), 5-Year Estimates

Work Status

	Full-time, year round female workers with earnings in the past year*	% female employed**	% female unemployed**
United States	59.12%	53.69%	5.43%
Illinois	61.32%	55.30%	6.00%
Southern Illinois	53.78%	48.93%	4.85%
Alexander	48.45%	40.57%	7.88%
Franklin	49.74%	44.63%	5.12%
Gallatin	47.91%	42.92%	4.99%
Hamilton	48.31%	44.24%	4.07%
Hardin	48.95%	42.58%	6.37%
Jackson	57.09%	52.22%	4.87%
Jefferson	58.34%	51.65%	6.69%
Johnson	49.72%	46.24%	3.48%
Massac	53.00%	49.60%	3.39%
Perry	54.05%	47.69%	6.36%
Pope	45.64%	43.08%	2.56%
Pulaski	52.01%	44.21%	7.80%
Randolph	56.33%	53.33%	3.00%
Saline	45.80%	39.69%	6.11%
Union	49.48%	45.94%	3.54%
Washington	60.92%	57.01%	3.91%
White	52.33%	48.28%	4.05%
Williamson	56.04%	51.62%	4.42%

***Percentage of total females*

***Percentage of total females in the workforce*

Table 7

2013 American Community Survey (ACS), 5-Year Estimates

Median Income

	Average median income ($)	Median income of men ($)	Median income of women ($)	Women's median income as a percentage of men's
United States	43880	49410	38729	78.4%
Illinois	47149	52824	40983	77.6%
Southern Illinois	37678	43641	30896	70.8%
Alexander	27203	34018	24392	71.7%
Franklin	35715	42045	29626	70.5%
Gallatin	34695	44911	22889	51.0%
Hamilton	37691	43072	31681	73.6%
Hardin	42566	52109	26650	51.1%
Jackson	37991	42135	33803	80.2%
Jefferson	36619	42900	30859	71.9%
Johnson	37632	49875	31154	62.5%
Massac	40341	42079	32095	76.3%
Perry	39001	43884	33055	75.3%
Pope	39286	41133	37730	91.7%
Pulaski	34583	39032	31595	80.9%
Randolph	37388	45049	28818	64.0%
Saline	40192	44337	30450	68.7%
Union	38478	40060	37241	93.0%
Washington	40705	45821	32179	70.2%
White	38428	45608	29583	64.9%
Williamson	39697	47468	32330	68.1%

Table 8

Gender-Based Violence

	Criminal sexual assault*	Reported domestic offenses**
United States	29.10	210-540
Illinois	43.10	485.52
Southern Illinois	38.55	296.79
Alexander	88.50	1335
Franklin	38.20	341.1
Gallatin	0.00	253.6
Hamilton	12.40	142.4
Hardin	22.90	0
Jackson	74.00	866.2
Jefferson	77.60	177.9
Johnson	21.80	7.9
Massac	40.10	755.3
Perry	49.10	143.9
Pope	0.00	22.5
Pulaski	32.20	182.3
Randolph	21.40	168.4
Saline	66.10	160.4
Union	38.90	175
Washington	13.70	89.3
White	34.10	89.1
Williamson	62.90	431.9

**Source: The Federal Bureau of Investigation, Uniform Crime Reporting Statistics; "Forcible rape rate per 100,000*

***Source: Illinois State Police, Crime and Risk Factor Data: Domestic Offenses 2011; Rate per 100,000*

5) Appendix II: Gender Sensitive Disaster Management: Best Practices

A. **Mitigation:** steps to reduce vulnerability to the impacts of disasters

a. RISK ANALYSIS

i. *Understand geographies of social vulnerability including: household structure, division of labor, occupations, working conditions, gendered wage gaps, and overall economic resources*

ii. *Understand structural weaknesses of facilities providing women's health care, and domestic violence services*

b. RISK REDUCTION

i. *Educate women on gender-based violence and ways to defend themselves*

ii. *Key infrastructure such as women's health facilities and domestic violence shelters should be identified as critical infrastructure and built to reduce damage, destruction, and loss of life. Monies for these efforts may be available from the "National Pre-Disaster Hazard Mitigation Fund" created under the Disaster Mitigation Act of 2000.*

B. **Preparedness:** steps for capacity building before disasters – planning, organizing, training, equipping, exercising, evaluating, correcting

a. *Have widespread knowledge of available facilities that provide women's health care, their capacity, and location*

b. *Train health professionals (regardless of their specialization) in the potential effects of disasters on women's health (e.g. through educational conferences or in-house training sessions)*

c. *Create a plan to secure anonymity and housing for domestic violence victims in the event of a disaster and evacuation*

d. *Build disaster response coalitions between groups such as domestic violence shelters, disaster managers, churches, and community centers*

e. *Know local family structures – including areas where there are greater proportions of single parent households, elderly living alone, and persons with disabilities. Plan to target these areas for extra help in the event of a disaster – both for evacuation and recovery*

f. *Set up community-based warning systems*

g. *Draw on the knowledge of local women and community leaders in creating disaster management policies that will work for a particular area*

h. *Identify areas with high rates of pre-disaster gender-based violence – create plans to minimize gender-based violence in the event of a disaster in these areas. This work should incorporate the knowledge of local women's shelters*

i. *Create national networks of domestic violence service providers and healthcare providers. Integrate these networks into emergency plans in an effort to provide continuous care to those who need it.*

j. Store important medical records in a secure database that can be accessed remotely by health providers if necessary

C. **Emergency Response:** measures to address immediate threats of disaster and minimize hazards created by a disaster

a. Along with routine emergency medical care, be equipped to carry out medical care for pregnant and post-partum women
b. Provide emergency birth control to women of reproductive age
c. Set up emergency women's health care facilities and repair facilities that provide women's health care
d. Evacuation plans should draw on the strengths of family and social networks for providing emotional and financial support (e.g. make efforts to keep groups together on evacuation buses, allow groups to stay together in emergency shelters)
e. Draw on the decision making roles of women and their potential higher likelihood of heeding disaster warnings and calls to evacuate or seek shelter
f. Integrate the resources of local community centers, churches, and other service sectors into the formal management process
g. Provide spaces for women to report gender-based violence and find shelter from it
h. Provide privacy within emergency shelters for women to bathe, wash, or breastfeed

D. **Recovery:** steps to achieve full community restoration

a. Allow community members, especially women, to be involved in the restoration of their communities
b. Support the reconstruction of community centers, women's health care facilities, and domestic violence shelters
c. Provide disaster survivors with pets or help them reunite with pets
d. Housing policy should draw on the strengths of communities, allow disaster aid to be pooled, and provide housing options for non-nuclear families
e. Alongside job training or medical care to help individuals recover, day care should be offered so that parents are not kept from pursuing their own health
f. Work to provide stable housing and support for individuals who did not own a home, especially those who are also poor. Prioritize providing stable housing to families with children

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